



# The Wageningen Statement: Climate-Smart Agriculture - Science for Action

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24-26 October 2011 - Ede / Wageningen - The Netherlands



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## The Global Science Conference on Climate–Smart Agriculture (GSCSA)

*October 26, 2011*

### **Background**

Over 160 participants from 38 countries from scientific institutions, universities, multilateral scientific organizations, governments, international organizations, farmers' organizations, private sector and civil society organizations convened at the Global Science Conference on Climate-Smart Agriculture in Wageningen, Netherlands, 24–26 October 2011, convened to identify scientific priorities that will lead to climate-smart agriculture<sup>1</sup>.

The participants took stock of the current state of global knowledge of the science and best practices concerning climate smart agriculture worldwide; identified key priorities for further knowledge development as well as efficient and effective ways to implement possible interventions. The conference focused on the following themes:

- Sustainable intensification and climate-smart solutions – enhancing food production while reducing greenhouse gas emissions;
- Overcoming the barriers to climate-smart agriculture;
- Managing volatility and risks – technical and social-economic options for climate-smart risk management.

The global science conference in Wageningen is a follow-up to the Global Conference on Agriculture, Food Security and Climate Change, hosted by the Netherlands in 2010, that concluded that agriculture (including forestry and fisheries) must be part of the solution to climate change.

### **Preamble**

*Recognizing* that the world today faces one of the biggest challenges of the 21st century: how to feed 9 billion people in 2050 in a way that is not detrimental to planet Earth, under a changing climate and in the context of growing competition for land and natural resources;

*Recognizing* the critical role of farmers in sustainable development and in alleviating poverty amongst the most vulnerable;

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<sup>1</sup> FAO: climate smart agriculture is agriculture that sustainably increases productivity, resilience (adaptation), reduces /removes greenhouse gas emissions (mitigation), and enhances achievement of national food security and development goals.

*Acknowledging* the close linkages amongst food security, livelihood improvement, climate change adaptation and mitigation; and green growth;

*Affirming* that climate-smart agriculture offers triple wins through integrated approaches for food security, adaptation and mitigation;

*Recognizing* the importance of farmer-owned organizations to meet the needs of farmers in the transition to climate-smart agriculture;

*Noting* that climate-smart agriculture is closely linked to sustainable land, forest and watershed management, use of agricultural biodiversity, water and energy and the preservation of ecosystems;

*Realizing* that sustainable agricultural intensification has the potential to reduce the demand for land and therefore reduces pressure on forests and other natural ecosystems;

*Recognizing* that to achieve food security, adaptation is a priority for many countries, and eradicating poverty and protecting vulnerable groups is an essential component of adaptation; further recognizing that these efforts may also generate mitigation benefits.

Recognizing that, at the global level, mitigation in agriculture will be essential in meeting the global goal of avoiding dangerous climate change.

*Noting* that climate-smart agriculture seeks to increase productivity in an environmentally and socially sustainable way, to strengthen farmers' resilience to climate change, and to reduce agriculture's contribution to climate change by reducing greenhouse gas emissions and increasing carbon storage on farmland;

*Noting* that climate-smart agriculture includes proven techniques – such as mulching, intercropping, integrated pest and disease management, conservation agriculture, crop rotation, agroforestry, integrated crop-livestock management, aquaculture, improved water management at different scales, and better weather forecasting for farmers – but also innovative practices, such as early warning systems and risk management, including insurance to the benefit of farmers.

*Recognizing* the need for urgent integrated action at scale to tackle the triple challenge of achieving food security now and into the future, adapting to climate change and reducing the impact of agriculture on the climate;

*Acknowledging* the need of getting existing technologies off the shelf and into the hands of farmers while also underscoring the importance of traditional and indigenous knowledge and farmer's innovation in combination with new technologies, such as drought or flood tolerant crops, to timely meet the demands of the changing climate;

*Noting* the lack of adequate institutional arrangements to enable transfer and adoption of climate-smart technologies and practices and recognizing the importance of better coordination and harmonization of institutions;

*Noting* that research, education, extension and innovation have in the past been instrumental in greatly expanding agricultural growth, in enhancing food security, in developing technologies and practices that have resulted in higher productivity, more efficient and effective use of agricultural inputs;

*Affirming* the important role that women and youth play in agriculture and sustainable development, and the need for their effective involvement in research and development for climate-smart agriculture and food security;

*Recognizing* that research, education, extension and innovation have resulted in significant benefits in terms of proven technologies, practices and incentive systems to climate-smart agriculture which require the appropriate policy environment, and investment and up-scaling and that there are key areas where additional research and investment are required;

*Acknowledging* the importance of participatory research and scaling-up through learning-by-doing in close collaboration with farmers and service-providers;

*Recognizing* that, in agriculture “context”, is crucial and thus one-size-fits-all solutions will not work;

*Welcoming* the establishment of the CGIAR Research Program on Climate Change, Agriculture and Food Security, the Global Research Alliance on Agricultural Greenhouse Gases, and other related processes, which provide a framework for voluntary action to increase cooperation and investment in research activities aimed at reducing greenhouse gases and enhancing productivity and adaptive capacity of agricultural systems while helping to meet food security objectives;

**Hereby:**

*1. Urge increased farm and landscape level research, education, extension and innovation in climate-smart agriculture.*

We, researchers and academics, and those funding research, commit to prioritize the following areas for farm-oriented research in order to support the scaling up of climate-smart agriculture:

- a. *Sustainable intensification – producing more with more efficient use of inputs and with less of an environmental impact*
  - i. Improve nutrient and water management, both in rain fed and irrigated and aquaculture systems, to enhance the efficiency and efficacy of agriculture.
  - ii. Better understanding of the role forests, trees on farmland and other components of biodiversity play in maintaining ecosystem services in

agricultural landscapes, e.g. role in stabilizing water provision, pollination services.

- iii. Integrated pest, disease and weed management – this will become even more important as climate change alters patterns of pests and diseases.
- iv. Promote climate-smart livestock production, improve fodder production and improve grazing management

*b. Integrated scientific approach*

- i. Link knowledge from diverse scientific areas (agriculture, climate change, water, energy, environment) with a view of achieving multiple benefits.
- ii. Enhanced downscaling of climate change models and other related global models so that their outputs are relevant to agricultural planners, service providers, researchers and farmers.
- iii. Enhanced forecasting of weather and near term climate: forecasting from days to decades for specific localities.
- iv. Establish linkages and coordination among academic and research institutions and extension services that link to farmers.

*c. Breeding for a 2030 world*

- i. Breeding priorities for future crops, animals/fish and fertilizer trees need to be identified, on a species-by-species basis, through close interaction between breeders, farmers and climate and global change scientists, and then the breeding strategies need implementation through appropriate investment.
- ii. Specific attention is needed to participatory breeding for delivering public goods, resilient systems through multiple breeding targets.
- iii. Look for ways to create a balance between requirements of Intellectual Property Rights and Access and Benefit Sharing and a fair access for farmers to breeding materials.
- iv. Focus on integration in breeding involving the whole process from genes to delivery; all relevant interest groups and all relevant research disciplines (including models).

*d. Climate change mitigation*

- i. An enhanced understanding of the carbon and greenhouse gas balance at all levels.
- ii. Enhance, simplify and harmonize methods and approaches to monitor greenhouse gas emissions and carbon sequestration, to measure and monitor.
- iii. Stimulate technology development and transfer in a number of priority areas: improving ecosystems services, mitigation options in crop-agriculture, the livestock and fisheries sector, soil carbon sequestration options, innovative uses of biomass.
- iv. Develop better understanding of economic and social synergies and trade-offs between adaptation, mitigation and food security.

*e. National decision policies and support to overcome barriers to climate-smart agriculture*

- i. Call on relevant actors to clarify the diverse nature of barriers to climate-smart agriculture and develop concrete solutions, ready to use at farm level.
- ii. Identifying incentives and institutional arrangements that enable and empower farmers, in particular women, to adopt climate-smart agriculture.
- iii. Develop integrated models and decision-support tools for national decision makers to help prioritize agricultural actions, technologies and practices and to manage trade-offs.
- iv. Building the institutions and incentives for climate-smart agriculture and pro-poor mitigation (e.g., the role of farmer organizations, reducing transaction costs, policy instruments that work for farmers and that help balance trade-offs amongst food security, adaptation, mitigation, energy needs etc.).
- v. Build a better understanding of the role of gender equity in management of climate-smart agriculture.
- vi. Building institutions and incentives to enable all farmers to adopt climate-smart practices, such as low transaction cost mechanisms for accessing climate finance, support to farmers organizations and policy instruments that produce trade-offs between food security, adaptation and mitigation.
- vii. Improve understanding of subsidies and/or alternative financing mechanisms, such as for water and electricity, which incentivize agricultural practices that contribute to depletion of water supplies or destruction of native ecosystems; and identify alternative policy options that provide compensation targeting the poor.
- viii. Enhanced understanding of the drivers of price volatility and adequate response measures.

*f. Climate risk management*

- i. Enhance understanding of linkages between technological, social and economic options to increase resilience of livelihoods and communities.
- ii. From satellite to cell phone: getting weather advisories, early warning information, climate-indexed insurance payments etc. direct to farmers, especially women.
- iii. Enhanced understanding of the trade-offs, in specific contexts, of diversification (in livelihoods, agro-biodiversity and/or farming systems) vis-à-vis specialization.

- g. *Communicating Science*
    - i. Develop innovative communication-methods about best practices and scientific options between all relevant stakeholders and make them operational, for example, in policy briefs for policy makers.
2. *Call on all stakeholders to contribute to platforms and capacity enhancement that improve dialogue and learning about proven policies, technologies and practices for climate-smart agriculture.*
    - a. We call on all actors to adopt a farmer-based approach when designing policies and setting priorities to achieve action on the ground.
    - b. We call on international and regional institutions to develop and strengthen common platforms for more coherent science-informed dialogue across climate change, agriculture, crisis response and food security.
    - c. We urge stakeholders, particularly at the global and regional level, to develop and put in place the appropriate monitoring systems that can help track agricultural production and environmental impact assessment, so that trade-offs can be clarified and dealt with.
    - d. We call on relevant agencies from the national to the global level to increase knowledge of best practices and enhance access to innovations among food producers (often women), through support to revitalized extension services, technology transfer and communities of practice (e.g., South-South, farmer-to-farmer exchange, regional learning partnerships).
    - e. We call on relevant actors and stakeholders to strengthen and develop institutions to broker and foster innovation by improving communication channels to new sources of information related to climate change.
    - f. We call on relevant actors to create new business models by combining skills and capacities of different actors and bringing together financial mechanisms and institutions.
  3. *Call on implementing agencies from national governments and civil society, and the private sector, to provide the impetus for, and support to, proven climate-smart technologies and practices.*
    - a. We urge greater focus on climate-smart risk management as a means to counter volatility and shocks, including enhanced weather advisories, seasonal forecasts, early warning systems, strategic food reserves, support to diversified livelihood portfolios and targeted support to the most vulnerable members of society.
    - b. We urge greater attention to the food value chain system; for example considerable gains can be achieved through reducing post-harvest losses, enhancing management of the food value chain system, and integrating approaches to food and bioenergy products and materials.
    - c. We urge more focus on a range of soil, tree and water management techniques, including conservation agriculture, integrated pest management, agroforestry, silvo-pastoral systems, aquaculture, reduced tillage approaches and micro-dosing of fertiliser applications.

- d. We urge greater attention to a range of production systems that can be climate-smart, e.g. high productive precision agriculture for irrigated rice systems, aquaculture integrated into hydropower/irrigation, evergreen agriculture, well managed grassland and grazing land and integrated feed, food and energy systems.
4. *Urge all stakeholders to put in place the needed policies, strategies and frameworks to build climate-smart agriculture, and the associated research and development.*
- a. We call upon the COP17/CMP 7 in Durban, South Africa to adopt a decision to establish a Subsidiary Body for Scientific and Technological Advice Programme of Work on the scientific, technical and socio-economic aspects of agricultural adaptation and mitigation as a first step to mainstreaming agriculture in international climate change policy. This Programme of Work should address the challenges of food security, climate adaptation and mitigation in an integrated fashion.
  - b. We call on participants to the official follow-up meeting of the Global Conference on Agriculture, Food Security and Climate Change in Hanoi, Vietnam, in March 2012, to take note of the scientific priorities outlined in this Wageningen Statement as a basis to inform policy.
  - c. We call on delegates to the Rio+20 Earth Summit to make climate-smart agriculture central to Green Growth.
  - d. We call on national governments to strengthen institutions from local to global to facilitate technology transfer, including robust seed systems capable of delivering a diversity of plant genetic resources needed for adaptation.
  - e. We call on relevant stakeholders at all levels to strengthen and develop institutions for implementing standardized performance measures related to adaptation and mitigation as a tool for accessing climate finance.
  - f. We call on all relevant stakeholders to facilitate the access of female farmers to resources, information and technologies.
  - g. We call on national governments to empower food producers, especially women, and other partners in the food value chain to implement climate-smart agriculture, including, where appropriate, strengthening land and water rights, increasing access to markets, finance and insurance, enhancing local capacity (e.g., farmer and community-based organizations, service organisations), and strengthening various public-private partnerships in the food value chain.
  - h. We urge greater attention to landscape planning and zoning, to optimize management and create ecological benefits.
5. *Urge national governments, regional organisations and private sector to allocate adequate financing to climate-smart agriculture and rural development, and the associated research and development.*
- a. We call upon all countries to ensure that climate financing mechanisms recognize the importance of financing for agriculture in both adaptation and mitigation.
  - b. We call on all actors from the public and private sector to increase investments in farm level research, technology and information dissemination to facilitate the adaptation and application of climate-smart agriculture.



- c. We call on all countries to finance “early action” on proven technologies, practices and incentive systems to drive change in agricultural production systems to adapt to climate change and weather variability, while contributing to climate change mitigation.
- d. Result-based funding should be targeted to the level where it matters most, i.e. at the farm-level.

**DATED this the 26<sup>th</sup> Day of October 2011**

**PLACE: Wageningen, Netherlands**